

Sixth National Communication of the United States of America

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Acronyms & Abbreviations

| | |
|----------------|---|
| 3D | three-dimensional |
| AAAS | American Association for the Advancement of Science |
| AASHE | Association for the Advancement of Sustainability in Higher Education |
| AB | Assembly Bill |
| ac | acre |
| ACCRI | Aviation Climate Change Research Initiative |
| ACEF | Africa Clean Energy Finance |
| ACRF | Atmospheric Radiation Measurement Climate Research Facility |
| ACUPCC | American College & University Presidents' Climate Commitment |
| AEO2013 | <i>Annual Energy Outlook 2013</i> |
| AERONET | AErosol RObotic NETwork |
| AFVs | alternative fuel vehicles |
| AGAGE | Advanced Global Atmospheric Gases Experiment |
| AIP | Africa Infrastructure Program |
| AIRS | Atmospheric InfraRed Sounder |
| AISL | Advancing Informal STEM Learning |
| AISS | Antarctic Integrated System Science |
| AMF | Atmospheric Radiation Measurement Mobile Facility |
| AMO | Advanced Manufacturing Office |
| AMS | American Meteorological Society |
| ANL | Argonne National Laboratory |
| AON | Arctic Observing Network |
| AR5 | IPCC Fifth Assessment Report |
| ARB | Air Resources Board |
| ARCSS | Arctic System Science Program |
| ARM | Atmospheric Radiation Measurement |
| ARPA-E | Advanced Research Projects Agency-Energy |
| ARRA | American Recovery and Reinvestment Act of 2009 |

| | |
|------------------------------------|---|
| ARS | Agricultural Research Service |
| ASR | Atmospheric Systems Research Program |
| ASSP | Arctic Social Sciences Program |
| ATE | Advanced Technical Education Program |
| A-Train | afternoon train |
| ATVM | Advanced Technology Vehicles Manufacturing Loan Program |
| AZA | Association of Zoos and Aquariums |
| BAP | Biorefinery Assistance Program |
| BCF | billion cubic feet |
| BEA | Bureau of Economic Analysis |
| BECF | Building Energy Codes Program |
| BER | Office of Biological and Environmental Research |
| BIA | Bureau of Indian Affairs |
| BLM | Bureau of Land Management |
| BMT | billion metric tons |
| BOEM | Bureau of Ocean Energy Management |
| BOR | Bureau of Reclamation |
| bpd | barrels per day |
| BRACE | Building Resilience Against Climate Effects |
| BRC | Bioenergy Research Center |
| BTO | Building Technologies Office |
| BTS | Bureau of Transportation Statistics |
| Btu | British thermal unit |
| C | carbon |
| °C | degree Centigrade |
| C₂ES | Center for Climate and Energy Solutions |
| C₂F₆ | hexafluoroethane |
| C₄F₁₀ | perfluorobutane |
| C₆F₁₄ | perfluorohexane |
| CAA | Clean Air Act |
| CAAFI | Commercial Aviation Alternative Fuels Initiative |
| CAFE | Corporate Average Fuel Economy |
| CAFEC | Central Africa Forest Ecosystems Conservation Project |
| CALIPSO | Cloud-Aerosol Lidar and Infrared Pathfinder Satellite Observation |
| CAP | 2013 <i>Climate Action Plan</i> |
| CAR | <i>U.S. Climate Action Report</i> |
| CARPE | Central Africa Regional Program for the Environment |
| CBECS | Commercial Buildings Energy Consumption Survey |
| C-CAP | Coastal Community Adaptation Program |

| | |
|------------------------|---|
| CCEP | Climate Change Education Partnership |
| CCRI | Climate Change Research Initiative |
| CCS | carbon capture and storage |
| CDC | Centers for Disease Control and Prevention |
| CEAC | Clean Energy Assistance Center |
| CEM | Clean Energy Ministerial |
| CENR | Committee on Environment and Natural Resources |
| CEOS | Committee on Earth Observation Satellites |
| CEQ | Council on Environmental Quality |
| CERC | U.S.–China Clean Energy Research Center |
| CERES | Clouds and the Earth’s Radiant Energy System |
| CESC | Clean Energy Solutions Center |
| CESN | Climate Effects Science Network |
| CfA | Center for Astrophysics |
| CFP | Climate Friendly Parks |
| CH₄ | methane |
| CHP | combined heat and power |
| CHPP | Combined Heat and Power Partnership |
| CI | Conservation International |
| CIFs | Climate Investment Funds |
| CLD | Climate and Large-scale Dynamics |
| CLEAN | Climate Literacy and Energy Awareness Network |
| CLIP | Climate Leadership In Parks |
| CLIZEN | Climate Literacy Zoo Education Network |
| CMIP5 | Phase 5 of the Coupled Model Intercomparison Project |
| CMM | coal mine methane |
| CMOP | Coalbed Methane Outreach Program |
| CNH | Dynamics of Coupled and Natural Human Systems |
| CNRS | Centre Nationale de Recherche Scientifique |
| CO | carbon monoxide |
| CO₂ | carbon dioxide |
| CO₂e | carbon dioxide equivalents |
| COEA | President’s Council of Economic Advisors |
| COMcheck | commercial compliance software |
| COOP | Cooperative Observer Program |
| COP | Conference of the Parties |
| COSMIC | Constellation Observing System for Meteorology, Ionosphere, and Climate |
| CPRAL | Coastal Protection and Restoration Authority of Louisiana |
| CRE | Climate Ready Estuaries program |

| | |
|-----------------|--|
| CrIS | Cross-track Infrared Sounder |
| CRN | Climate Reference Network |
| CRP | Conservation Reserve Program |
| CRSCI | Climate-Ready States and Cities Initiative |
| CSC | climate science center |
| CSLF | Carbon Sequestration Leadership Forum |
| CSP | Climate Services Partnership |
| CSP | Conservation Stewardship Program |
| CSREES | Cooperative State Research, Education, and Extension Service |
| CTA | Conservation Technical Assistance Program |
| CTF | Clean Technology Fund |
| CTI | Climate Technology Initiative |
| CTIC | Conservation Technology Information Center |
| cu ft | cubic feet |
| DAAC | Distributed Active Archive Center |
| DERA | Diesel Emissions Reduction Act |
| DHS | U.S. Department of Homeland Security |
| DLR | Deutsches Zentrum für Luft- und Raumfahrt |
| DMSP | Defense Meteorological Satellites Program |
| DOC | U.S. Department of Commerce |
| DoD | U.S. Department of Defense |
| DOE | U.S. Department of Energy |
| DOI | U.S. Department of the Interior |
| DOS | U.S. Department of State |
| DOT | U.S. Department of Transportation |
| DR | Discovery Research |
| DRMS | Decision, Risk, and Management Sciences |
| EaSM | Earth system model |
| ECHO | EOS ClearingHUse |
| EC-LEDs | Enhancing Capacity for Low-Emission Development Strategies |
| ECO-Asia | Environmental Cooperation-Asia |
| ECV | essential climate variable |
| EERE | Office of Energy Efficiency and Renewable Energy |
| EERPAT | Energy and Emissions Reduction Policy Analysis Tool |
| EERS | efficiency resource standard |
| EESE | Ethics Education in Science and Engineering |
| EFRC | Energy Frontier Research Center |
| EESI | Environmental and Energy Study Institute |
| EIA | U.S. Energy Information Administration |

| | |
|-----------------------|---|
| EISA | Energy Independence and Security Act of 2007 |
| ELTI | Environmental Leadership Training Initiative |
| EMAPS | Environmental Monitoring and Policy Support Project |
| EMS | environmental management systems |
| E.O. | executive order |
| EO-1 | Earth Observing-1 |
| EOP | Executive Office of the President |
| EOR | enhanced oil recovery |
| EOS | Earth Observing System |
| EOSDIS | Earth Observing System Data and Information System |
| EPA | U.S. Environmental Protection Agency |
| EPAct | Energy Policy Act of 2005 |
| EQIP | Environmental Quality Incentives Program |
| ESIP | Federation of Earth Science Information Partners |
| ESM | Earth system model |
| ESRL | Earth System Research Laboratory |
| ESSEA | Earth System Science Education Alliance |
| ETE | Evolution of Terrestrial Ecosystems Program |
| EUGENE | Ecological Understanding as a Guideline for Evaluation of Nonformal Education |
| EUMETSAT | European Organization for the Exploitation of Meteorological Satellites |
| EUPP | Energy Utility Partnership Program |
| Ex-Im | Export-Import Bank of the United States |
| °F | degree Fahrenheit |
| FAA | Federal Aviation Administration |
| FAO | Food and Agriculture Organization of the United Nations |
| FCPF | Forest Carbon Partnership Facility |
| FEMA | Federal Emergency Management Agency |
| FEMP | Federal Energy Management Program |
| FESD | Frontiers in Earth System Dynamics |
| FEWS NET | Famine Early Warning Systems Network |
| FGHG | fluorinated greenhouse gas |
| FHA | Federal Housing Administration |
| FHWA | Federal Highway Administration |
| FIP | Forest Investment Program |
| FLIGHT | Facility Level Information on Greenhouse gases Tool |
| FSA | Farm Service Agency |
| FSF | fast start finance |
| ft² | square feet |
| ft³ | cubic feet |

| | |
|---------------|---|
| FTA | Federal Transit Administration |
| FWS | U.S. Fish and Wildlife Service |
| FY | fiscal year |
| G8 | Group of Eight |
| GATE | Graduate Automotive Technology Education |
| GAW | Global Atmospheric Watch |
| GCCI | Global Climate Change Initiative |
| GCEP | Global Change Education Program |
| GCF | Green Climate Fund |
| GCIS | Global Climate Information System |
| GCOS | Global Climate Observing System |
| GCRA | Global Change Research Act of 1990 |
| GDA | Global Development Alliance |
| GDP | gross domestic product |
| GEF | Global Environment Facility |
| GEO | Group on Earth Observations |
| GEOSS | Global Earth Observation System of Systems |
| GFCS | Global Framework for Climate Services |
| GFW | Global Forest Watch |
| Gg | gigagram |
| GHG | greenhouse gas |
| GIF | Generation IV International Forum |
| GIS | geographic information system |
| GLOBE | Global Learning and Observations to Benefit the Environment |
| GLOSS | Global Sea Level Observing System |
| g/mi | grams per mile |
| GMI | Global Methane Initiative |
| GOES | Geostationary Operational Environmental Satellite |
| GOES-R | Geostationary Operational Environmental Satellite R-Series |
| GOOS | Global Ocean Observing System |
| GPP | <i>Green Parks Plan</i> |
| GPP | Green Power Partnership |
| GPS | global positioning system |
| GRACE | Gravity Recovery and Climate Experiment |
| GREF | Graduate Research Environmental Fellowship |
| GRP | Grassland Reserve Program |
| GRUAN | GCOS Reference Upper-Air Network |
| GTOS | Global Terrestrial Observing System |
| GWP | global warming potential |

| | |
|------------------------------------|---|
| H₂CO₃ | carbonic acid |
| ha | hectare |
| HCFC | hydrochlorofluorocarbon |
| HDV | heavy-duty vehicle |
| HFC | hydrofluorocarbon |
| HFC-23 | fluoroform |
| HHS | U.S. Department of Health and Human Services |
| HIA | health impact assessment |
| HPwES | Home Performance with ENERGY STAR |
| HUD | U.S. Department of Housing and Urban Development |
| IAC | Industrial Assessment Center |
| IAM | integrated assessment model |
| IASI | Infrared Atmospheric Sounding Interferometer |
| IAV | impact, adaptation, and vulnerability |
| ICCAGRA | Interagency Coordinating Committee for Airborne Geosciences Research and Applications |
| ICCATF | Interagency Climate Change Adaptation Task Force |
| ICCTF | Interagency Climate Change Task Force |
| ICESat | Ice, Cloud, and land Elevation Satellite |
| ICSU | International Council for Science |
| IDEA | Integrated Data and Environmental Applications Center |
| IEA | International Energy Agency |
| IECC | International Energy Conservation Code |
| IES | Integrated Earth Systems |
| IGERT | Interactive Graduate Education and Research Trainee Program |
| IGFA | International Group of Funding Agencies for Global Change Research |
| in | inch |
| IOC | Intergovernmental Oceanographic Commission |
| IOOS | Integrated Ocean Observing System |
| IPCC | Intergovernmental Panel on Climate Change |
| IPL | Interfaith Power and Light |
| ISO | International Organization for Standardization |
| ISS | International Space Station |
| ISSC | International Social Science Council |
| ISSE | <i>Integrative Science for Society and Environment</i> |
| ITEP | Institute for Tribal Environmental Professionals |
| IUFRO | International Union of Forest Research Organizations |
| IWGCCH | Interagency Working Group on Climate Change and Health |
| JPSS-1 | Joint Polar Satellite System-1 |

| | |
|--------------------------|--|
| K-12 | kindergarten through grade 12 |
| KDFWR | Kentucky Department of Fish and Wildlife Resources |
| kg | kilogram |
| km | kilometer |
| km² | square kilometers |
| kWh | kilowatt-hour |
| lb | pound |
| LCCs | landscape conservation cooperatives |
| LDCs | least developed countries |
| LDCF | Least Developed Countries Fund |
| LDCM | Landsat Data Continuity Mission |
| LDV | light-duty vehicle |
| LEAP | Lighting and Energy Access Partnership |
| LED | light-emitting diode |
| LEDs | low-emission development strategies |
| LEDs GP | Low Emission Development Strategies Global Partnership |
| LFG | landfill gas |
| LIDAR | light detection and ranging |
| LLNL | Lawrence Livermore National Laboratory |
| LMOP | Landfill Methane Outreach Program |
| LPO | Loan Program Office |
| LTAR | Long-Term Agro-Ecosystem Research Network |
| LTER | Long-Term Ecological Research program |
| LULUCF | land use, land-use change, and forestry |
| m² | square meters |
| m³ | cubic meters |
| M2M | Methane to Markets program |
| MAP-21 | Moving Ahead for Progress in the 21st Century Act |
| MATCH | Metadata Access Tool for Climate and Health |
| MCC | Millennium Challenge Corporation |
| MECS | Manufacturing Energy Consumption Survey |
| MEDUCA | Panama's Ministry of Education |
| MEF | Major Economies Forum on Energy and Climate |
| mi | mile |
| mi² | square miles |
| MM | million |
| MMBtu | million British thermal units |
| MMt | million metric tons |
| MMtCO₂ | million metric tons of carbon dioxide |

| | |
|-----------------------|--|
| MODIS | Moderate Resolution Imaging Spectroradiometer |
| MOVES | Motor Vehicle Emissions Simulator |
| MPL | micro-pulse lidar |
| MPLNET | Micro-Pulse Lidar Network |
| mpg | miles per gallon |
| MPO | metropolitan planning organization |
| MSM | multi-scale modeling |
| MSW | municipal solid waste |
| MW | megawatts |
| MWh | megawatt-hour |
| MY | model year |
| N₂O | nitrous oxide |
| NACP | North American Carbon Program |
| NAS | National Academies of Science |
| NASA | National Aeronautics and Space Administration |
| NASM | National Air and Space Museum |
| NASS | National Agricultural Statistical Service |
| NAST | National Assessment Synthesis Team |
| NCA | National Climate Assessment |
| NCDC | National Clean Diesel Campaign |
| NCDC | National Climatic Data Center |
| NEI | National Emission Inventory |
| NEMS | National Energy Modeling System |
| NEON | National Ecological Observatory Network |
| NextGen | Next Generation Air Transportation System Plan |
| NF₃ | nitrogen trifluoride |
| NFWPCAP | National Fish, Wildlife, and Plants Climate Adaptation Partnership |
| NGO | nongovernmental organization |
| NGSS | Next-Generation Science Standards |
| NHTSA | National Highway Traffic Safety Administration |
| NICE | NASA Minority University Research and Education Innovations in Climate Education |
| NIDIS | National Integrated Drought Information System |
| NIEHS | National Institute of Environmental Health Sciences |
| NIFA | National Institute of Food and Agriculture |
| NMME | National Multi-Model Ensemble |
| NMNH | National Museum of Natural History |
| NMVOC | nonmethane volatile organic compound |
| NOAA | National Oceanic and Atmospheric Administration |
| NOC | National Ocean Council |

| | |
|-----------------------|--|
| NO_x | oxides of nitrogen |
| NPCC2 | New York City Panel on Climate Change |
| NPOESS | National Polar-orbiting Operational Environmental Satellite System |
| NPP | National Polar-orbiting Partnership |
| NPS | National Park Service |
| NRC | National Research Council |
| NRCS | Natural Resources Conservation Service |
| NSF | National Science Foundation |
| NSIDC | National Snow and Ice Data Center |
| NSTA | National Science Teachers Association |
| NSTC | National Science and Technology Council |
| NTER | National Training & Education Resource |
| NTI | National Transit Institute |
| NWF | National Wildlife Federation |
| NWS | National Weather Service |
| NZP | National Zoological Park |
| O₃ | ozone |
| OAP | Office of Atmospheric Programs |
| OAQPS | Office of Air Quality Planning and Standards |
| OAS | Organization of American States |
| OCO | Orbiting Carbon Observatory |
| OCS | Outer Continental Shelf |
| ODS | ozone-depleting substance |
| OECD | Organisation for Economic Co-operation and Development |
| OEEd | Office of Education |
| OIG | Office of Inspector General |
| ONR | Office of Naval Research |
| OOI | Ocean Observatories Initiative |
| OPIC | Overseas Private Investment Corporation |
| OST | White House Office of Science and Technology |
| OSTP | Office of Science and Technology Policy |
| OSW | Office of Solid Waste |
| P2C2 | Paleo Perspectives on Climate Change |
| PAA | Price-Anderson Act of 1957 |
| PACE | Partnership to Advance Clean Energy |
| PaCIS | Pacific Climate Information System |
| PARTNER | Partnership for Air Transportation Noise and Emissions Reduction |
| PCMDI | Project for Climate Model Diagnosis and Intercomparison |
| PCNC | Punta Culebra Nature Center |

| | |
|------------------|--|
| PES | payment for ecosystem services |
| PFAN | Private Financing Advisory Network |
| PFC | perfluorocarbon |
| PM | particulate matter |
| POES | Polar Operational Environmental Satellite |
| PPCR | Pilot Program for Climate Resilience |
| PPD | Presidential Policy Directive on Global Development |
| PV | photovoltaic |
| QTR | Quadrennial Technology Review |
| QuickSCAT | Quick Scatterometer |
| R&D | research and development |
| RAMA | Research Moored Array for African-Asian-Australian Monsoon Analysis and Prediction |
| RAP | Repowering Assistance Program |
| RCN | Research Coordination Networks |
| RD&D | research, development, and demonstration |
| REAP | Rural Energy for America Program |
| RECS | Residential Energy Consumption Survey |
| REDD+ | reducing emissions from deforestation and forest degradation |
| REScheck | residential compliance software |
| RFS | renewable fuel standard |
| RGGI | Regional Greenhouse Gas Initiative |
| RISA | Regional Integrated Science and Assessments program |
| RITA | Research and Innovative Technology Administration |
| RPA | Regional Plan Association of New York City |
| RPA | Resources Planning Act of 2010 |
| RPS | renewable energy portfolio standard |
| RRIF | Railroad Rehabilitation and Improvement Financing |
| RSL | Arctic Research Support and Logistics |
| SAGE | Stratospheric Aerosol and Gas Experiment |
| SAR | Second Assessment Report |
| SB | Senate Bill |
| SCAN | Soil Climate Analysis Network |
| SCBI | Smithsonian Conservation Biology Institute |
| SCC | social cost of carbon |
| SCCF | Special Climate Change Fund |
| SCIPP | Southern Climate Impacts Planning Program |
| S'COOL | Students' Cloud Observations On-Line |
| SEAD | Super-Efficient Equipment and Appliances Deployment |
| SEDAC | Socioeconomic Data and Applications Center |

| | |
|-----------------------|---|
| SEES | science, engineering, and education for sustainability |
| SEP | Sustainable Energy Pathways |
| SERC | Smithsonian Environmental Research Center |
| SERVIR | Regional Visualization and Monitoring System |
| SF₆ | sulfur hexafluoride |
| SIDS | small-island developing states |
| SI-GEO | Smithsonian Institution Global Earth Observatory |
| SITES | Smithsonian Institution Traveling Exhibition Service |
| SITN | Solar Instructor Training Network |
| SLCP | short-lived climate pollutant |
| SLED | Solar and LED Energy Access initiative |
| SMM | sustainable materials management |
| SMR | small modular reactor |
| SNAP | Significant New Alternatives Policy Program |
| SNOTEL | SNOpack TELelemetry |
| SO₂ | sulfur dioxide |
| SOARS | Significant Opportunities in Atmospheric Research and Science |
| SORCE | Solar Radiation and Climate Experiment |
| SOS | Science On a Sphere® |
| SPURS | Salinity Processes in the Upper Ocean Regional Study |
| SREP | Scaling-up Renewable Energy Program |
| SRN | Sustainability Research Network |
| SSEC | Smithsonian Science Education Center |
| STEM | science, technology, engineering, and math |
| STRI | Smithsonian Tropical Research Institute |
| SURE | Summer Undergraduate Research Experience |
| SURFRAD | Surface Radiation Budget Network |
| SUV | sport utility vehicle |
| t | metric ton |
| T&D | transmission and distribution |
| TAO | Tropical-Atmosphere-Ocean |
| TAP | Technical Assistance Partnership |
| TCI | Transportation Climate Initiative |
| TCP | Terrestrial Carbon Processes |
| TEAM | Travel Efficiency Assessment Method |
| TFA | Tropical Forest Alliance |
| TFCA | Tropical Forest Conservation Act |
| TfL | Transport for London |
| Tg | teragram |

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| TIGER | Transportation Investment Generating Economic Recovery |
| TRMM | Tropical Rainfall Measuring Mission |
| TSI | total solar irradiance |
| TUES | Transforming Undergraduate Education in STEM |
| TVA | Tennessee Valley Authority |
| UCAR | University Corporation for Atmospheric Research |
| UK | United Kingdom |
| ULTRA | Urban Long-Term Research Area |
| UN | United Nations |
| UNDP | United Nations Development Programme |
| UNEP | United Nations Environment Programme |
| UNFCCC | United Nations Framework Convention on Climate Change |
| UNIFEM | United Nations Development Fund for Women |
| UNOLS | University-National Oceanographic Laboratory System |
| USACE | U.S. Army Corps of Engineers |
| U.S.-ACEF | U.S.-Africa Clean Energy Finance |
| USAID | U.S. Agency for International Development |
| USCRN | U.S. Climate Reference Network |
| USDA | U.S. Department of Agriculture |
| USFS | U.S. Forest Service |
| USGCRP | U.S. Global Change Research Program |
| USGEO | U.S. Group on Earth Observations |
| USGS | U.S. Geological Survey |
| VALE | Voluntary Airport Low Emission Program |
| VCOP | Voluntary Code of Practice for the Reduction of Emissions of HFC & PFC Fire Protection Agents |
| VMT | vehicle miles traveled |
| VOC | volatile organic compound |
| VOSCLim | Voluntary Observing Ship Climate Program |
| VOCTEC | Vocational Training and Education for Climate Energy |
| VTO | Vehicle Technologies Office |
| WAP | Weatherization Assistance Program |
| WCRP | World Climate Research Programme |
| WMO | World Meteorological Organization |
| WRI | World Resources Institute |
| WSC | Water Sustainability and Climate |